

# Kodakkanal Observatory

BULLETIN No II

## LIST OF PROMINENCES OBSERVED BETWEEN 1903 SEPTEMBER 1 AND 1904 DECEMBER 31

The following list contains all prominences observed between 1903 September 1 and 1904 December 31. They were made with the 6 inch Coolidge equatorial and a grating spectroscope up to 1904 December 1 and for the rest of the time with a three prism Linné spectroscope. Up to 1904 February 21 observations were made with only eight settings of the position circle so that the record up to that time cannot be considered quite complete after that date the whole limb was examined.

The heights of the prominences were measured by reference to the known width of the slit a method which if somewhat rough seems sufficiently accurate for the purpose and is very rapid. Many of the measurements have been checked by reference to photographs taken with the spectro heliograph and have been found quite satisfactory. Prominences of less than 10 seconds in height are not usually entered in the list unless they present some feature of interest. Almost all the observations were made in the C line but in the case of metallic prominences other parts of the spectrum were also observed.

The observations were made up to the end of January under the direction of Mr C. P. Butler. The observers were K. V. Sivarama Aiyar (K.V.S.), Sivarama Aiyar (S.S.) and G. Nagaraja Aiyar (G.N.).

Date	H.M.T.	H	Height		L	W	Remarks
			N	S			
1903							
Sept 1	K.V.S.	8 0	7		D		Slid hgt
		0 0					
1	K.V.S.	8 0	51		D		Low lg dtw m H l t
		9 0		20	I		M d t
3	K.V.S.	8 30	51		F		A l t l d gtl b g s
		9 30		56	W		Two m d t
13	K.V.S.	8 0	59		W		H l
		10 0		25	I		B d
14	K.V.S.	8 0		9	F		B d l l ght
		10 0		26	L		Sl i nd f t
17	K.V.S.	8 0		5	F		Sl d b t m d t l y l g l
		10 0					
22	S.S.	10 0	51		W		F l j l t l l
				17	F		V y l s
				27	H		Sm l l

Dt	d	b	H MMT	B	I t d		Lmb	II ht	E n l
					N t l	s h			
1908									
S pt	b	28	S			25		W	Tw l g d m l l t al S N t
D	25	S	9 30 t 10 0			6 58 14		W E E	Th Th l g Tw m l l O m l l
D	28	SS	9 30 t 10 0			64 24		W	O m d t l y l g
D	29	SS	9 30 t 10 0			3 68		W E	T m l l V y m l l
D	30	SS	9 30 t 10 0			2 61		W E	Th m d t O l g
O b	5	SS	9 0 t 9 30			21 60		W W D	Sm l l V r y m l l l l S N t
D	8	SS	9 30 t 10 0			4 16 68 38		E L E W	Sm l S N t Tw m d t d f y m l l th l w m l l Sm l l
D	9	SS	9 30 t 10 0			50 54 26		D E F E E h	M d t Sm l l Sm l l M d t m l l M d
D	10	SS	9 30 t 10 0			11 14 16		E W E E	Th l g l t th V y m l l L Tw m d t d m l l t o
D	11	SS	9 30 t 10 0			22 9		E E	V y m l l L g
D	12	SS	11 0 to 11 30			54 37 68 32		D D F W	O l g O m d t d m l l t h th O l g b d t t p t h t b O d t
D	13	SS	9 30 t 10 0			67 22		E W E E	O y l O e m a l l Tw l l t h th Tw y l a r g m d t d m l l
D	14	SS	9 30 t 10 0			58 28 t 16		E W E E	Tw y l g O l g Tw m l l Tw b d b t m d t l y h g h
D	15	SS	9 30 t 10 0			17 31		E E W	O l g d y l g l t h d O m l t S N t
D	16	SS	9 30 t 10 0			6 41		W W	
D	17	SS	9 30 t 10 0			58 33 t 33		E W	O n m d t O n y l a r g t w l g t w m d t l t a n t h
D	18	SS	9 30 t 10 0			47 42		W W	O n y l g O n l g
D	19	SS	9 30 t 10 0			2 t 2		W	Tw l g t w m l l d m d t
D	20	SS	9 30 t 10 0			24 t 34		E	O l g y l g d t d m l l
D	21	SS	9 30 t 10 0			67 66		W W	O m l t O l g S N t

D t d b	H MMr	B	L t t d		L mb	H ght	R n l
			N t l	S th			
1908							
O t b 28 KVS	J 0 t 10 0		20 51	24 24	D W W D		S l O b g d l T O y b g
D 30 KVS	9 15 t 10 15		9 28	31 10	W D I D		H g h T w b d b t l w H l l d O h g h d n l
N mb 7 SS	J 1 t 10 0 d 11 15		14	31 31 3 20 21	L D W W W W		V y b l L g L g M i t L g S m l l s N t
D 10 SS	9 30 t J 0		60 30	15	L U L P I E W W W		I M d t M d t L g L g L t v y b d S l S m l l S m l l
D 12 SS	10 10 t 10 30		68 7 01	28 3 73 52	I D E F I L W		M d t M d t L g L g S m l m l b l t b t l n t t p S l l S l d V y m l l s N t
D 13 SS	9 15 t 9 40		54	1	D I W		O y l g O m l l O l g s N t
D 14 KVS	10 0 t 10 40		31	13 31 15 38	L W I W W F		B d m d t B l m d t K l b S N t O l l l g l O b d m d t
D 16 KVS	10 10 t 10 0		63	51 87 68	D I W		I m d t l g d g r l s m l l O m l t a l n t T l m d t l d d t w b d
D 17 SS	11 5 t 11 20		63	8	I W		I w n d r t I w s N t
D 18 KVS	8 0 t 9 0		17	50 51 22	W E I W		O m d t d m l l t h t l S c N t
D 19 KVS	8 0 t 8 15		17	16	W		S N t O s m l l O m l l O b g l d l k p o m n n d n l n d P m l l O y b g h t b l w d m l l f t
D 20 KVS	8 0 t 8 15		17	19 54	D L F W		O b g b d l o l l k p m m  T w m d t l y l g h l b g h t O m l l O s m l l

D t d b	H MMT	B	L t t d		L b	H gh	l l
			h th	s tl			
1908	r						
N rb 21 SS	8 20 t 8 40			2 26 34 37 46	D E E E F		O m ll On ll l O m l t On m d t
D 23 KVS	8 80 9 20		4	94 t 44 11 84 38 58	F L W W W		A f h h i f ll O b d dhgl d l d d h h O l t Tw m l t
D 24 b	8 80 t 8 40			J	L		O l g S N t
D 30 KVS	9 0 9 30		12	84 17 2	L L W L		B d d t O b llwblt d m ll Tw m ll I b d l l m ll
D b 8 SS	9 0 t 9 30		11 16 4	36 81 29	D E E W W W		M l t N t M d M d t L g M d t M d t
D 9 KVS	10 20 t 11 0		35 17	52 17 28 40	F W E W W W		r m l O l l dlk O l ghtlw O m l m O y h g h d b d Tw d t
D 1 SS	8 20 t 9 0		18 t 27 10 30	80 88 82 88 88 88	E W W W E W W W		M d t V ybg Sm ll M l t L M d t f t L g L R L M l t M l t Sm ll
D 11 KVS	9 20 t 10 20		0	88 81 5 38 17	E E r L D L		O bgdt h d f m l m ph O bgdt h d f m h m pl O bg O b h t d m O m ll O ybg m ll
D 15 SS	7 45 t 8 15		82 59	54 82	E E L W		O l g m d t On y l g O m ll O l g
D 16 KVS	8 80 t 9 20			54 54 49 29 30	W r W W W		S l g O l l Tw l g d m d m Th m ll h g h d t w m ll f t O m ll
D 1 SS	8 45 t 9 20		1 49 47 49 t 89	4 t 49 8	L E D E W W		L g r g L g L g A d m ll F l g M d t

D t d b	M M T	B	L t t d		L b	H ght	R k
			N tl	S th			
1903							
D mb 17	SS		38 40 42 48		W W W W		S ll L g L g L g
D 22	KVS		57	37 29 29	W E E W W		A g l f b g p m A f l O b d b g O l d m d t O b g f h h n d b l
D 23	KVS		1 10 27 t 87	40 29 59	L F E W F W E E		O m ll S l m ll b ght L g O m d t L g b l l l ll O b g l m S f m l t p m O m ll O m d t n d t w m ll
D 24	SS		38 25	48 46 58 38	E E E E W		O y l g O m ll O l O m d t O y l g O l g l v y l g l t h th
D 2	SS		34	35	E W		O l g J h m l t t ll
D 26	SS		38	41 60 68 64 60	E E W W W		L w l g l t h th O y l g O m d t O m d t O m d t O l t
D 28	KVS			16 23 50 02 70 53 22 34 15 38 15	E E E E W W W W E E L		T w m d t d t m ll O m ll O l g d m d t O l g O n l g O m l t O m ll O n m l t O l g d l d l k O l t O l g d t h d
1904							
J y 4	KVS		33	33 10 07 31	E W W E E		T w y b b T w l g d m d t O n m ll B d l ll t l g v lo L w l d l k j l t t p m l t O w k l g h t d m l t
D	KVS		11	90 40 58 68 69 37 11 t 21	W W F W W E E		O b d d y h g h d m ll t l d O b g d t w m ll T w b g O m d t T w l ll b g l j n d t t p O n m ll T w b d m d t L w l d l k t d g 10

Dt d b	H MMT	B	L t t d		L mb	H g l t	R
			N th	S tl			
1904	x						
J y 6 KVS	10 0 t 11 0		19 27 29		W W W		
			12	2	D		
			28	28	D		
			55	46	D		
				65	W		
			37		W		
D 7 KVS	10 20 t 11 0		26	26	W		
			1	8	E		
			3		W		
			2	74	D		
			35		W		
D 15 KVS	9 40 t 10 30		30	30	D		
				19	W		
			9	29	W		
				59	I		
			59		W		
D 16 SS	9 20 t 9 45		27	3	L		
				39	D		
				42	D		
				12	W		
				8	W		
			38		W		
			43		W		
20 KVS	9 25 t 10 10		10	25	D		
			84		W		
				40	L		
					W		
D 30 SS	8 10 8 26 26 6 30 38		55	75	W		
				74	W		
				50	W		
				53	D		
				5	D		
				2	E		
				15	L		
Fbru y 1 SS	8 32 34 39 42 48 50		28 t 33 4 t 6	74 75 86 48	W W W L W W		
D 2 SS	8 8 10 10 14 2		10 t 14	89 8 88 40	W W W W W		
D 8 SS	9 30		12		W		

Dt d b	H MMT	B	L t t d		L m b	H g h t	R l
			N t l	S t l			
1904							
F b y l	GN		32 31	16 17 29 t 83	L I I L W W W	h m l l M d t V y m l l V y m l l g N t v y l g M i t S m l l	
D 5	SS			7 4	W W L	O l g d t O O l g d t O m l t	
D 6	GN		61 37 31 4	3)	D I I I W	O l g O l g O l g O l g T w m l l A l f t w l t l t w l l s	
D 8	SS	)		20 91 (8	W W W	O l g O l g O m l l	
D 8	SS	)	21 ) 81 12 43 11	54 52 44 11 93 3	W W W W W I	O y l g O y l g O l g f t O n l t O m l l O m d t	
D 9	GN		11 0 12 0	70 73 71 73	W W I I W W W I I I I	O l O l y m l l O m l t O m l t O l g y l t t d g b t 6 O l g y l g t l l t 8 O l g l t O m l t O l g O l g O l l O l l	
D 18	SS		8 45 50 9 02 03 06 06 07 06 15 2 81 t 9 83 9 50	13 t 19 31 20 31 81 9 23 27 1 62 t 79 50 t 57 67 3	I F I F W W W W W I I I I	V y l M d t L g L g I t L g M d t M d t M i t M i t V y l g V y l I l I l S l l	
D 14	SS		8 12 15 45 45 49 50 51 56 58 9 04	6 t 54 51 53 51 38 38 38 28 28 8 1	F W W W I I W I W I W	A t p i l l l l t t t M d t I L S l l S m l l S m l l S l l L l l M i t	

Dt	db	H MMT	B	L t t d		L mb	H g	R m k	
				N th	S th				
1904									
F b	y 14	SS	9 04 08 08 09 15 20 30 30		16 20 28 38			W W W W E W E E	M d t L g V y l g M d t f t M d e t M d t f n t M l t M d t
D	16	GN	10 0 t 11 30		7 52			E E D	Tw n ll Tw m ll O y l g l g d m d t S V t ( ) d t l l d t O y l g O d t dtw m ll O l d m d t O y l g d m d t O l l O y l S N t (b) O m ll
D	16	SS	8 9 9 13 16 17 8 21 27 30 32 33 36 37 41 44		60 56 44 42 38 34 0 23			W W E W W D W W L E F L D E	S ll V y l g V y l g f a t L R f t M d t f t M d t L L g V y l g V l b t 90 l gh L L g L g M d t L g
I	17	GN	8 35 40 0 0 5 28 40 10 15 2 30 11 0 10		59 45 81 9 5 2 14 15 23 64 4 70			W W E E W W E E l W W	O y l g O l g l d h gh O l l ) y l g t d 8 O y l g O l y l g S N t F l t l k Tw l O y l g l h m ll O y l g d y h gh
D	18	SS	8 20 9 28 28 30 40 4 0 0 8 39 33 36 47 47		68 50 49 17 41 t 37 27 18 19 t 17 25 48 t 4 46 t 4 4 63 71			W W W W E W E W W E E E E E	V y l g pt l d Sl d Sl d V y l g pt S m l l d O m l l l m d t l t h th A m b f l t l k j d t t p E p t M d t q t L g pt L g pt Tw m ll L g q t M d t q t
D	19	( N	9 2 37 10 20 34		44 11 1			W E E W	170 ± 50 ± Tw m d t f t O y b g f t O j l g b gh



Dt	db	H M M r	B	I t t d		L m b	H l t	R m l
				N t h	S t l			
1904								
F b	y 19	G N	10 50		10	E		O l g t l k t y h l t t p d
			1		41	E		O m d t
			56		1	L		O m d t
D	20	G N	10 50	42		I		O y l g t H g l t m p d v
			11 0		89	W		I h d t f f
			82	1		W		O l t
			83	81		W		I d t
			10		80	W		O l l
D	21	S S	8 15		41	W	60	L t p t
			18		8	W	60	L t p t
			0		5	W	2	S l d t y f t
			11	5		W	12	I l l m t t t p
			20		10	I	10	S m l l t
			27		8	I	10	S l l b t b d t l i
			31	38		W	48	L g m l p t
			18			W	6	V y m l l
			13	J		W	7	V y m l l
D	22	S S	8 1		11	W	10	E l d
			21	43		E	1	L l l p d
			3	30		W	6	A l l l
			46	8		W	2	S l d
D	8	G N	8 30		47	W	6	O l d l g h
			4		3	W	1	O m d t h g l
			8 50			W	1	O O l l
			54	5		W	31	O m d t
			9	47		W		O y m l l
			7			W		O y l l t w l l
D	21	S S	8 15		18	W	2	I l t
			0		13	W	18	I l t l l
			30		3	W	60	I l t l l l g d l l t l l l
			4	87		I	1	Q l t t l
			31		2	I	3	I l t
D	25	C N	11 0			I	18	O l t
			15		17	W	48	O l t
			3		87	W	10	O O l g l g h
			4		10	W	1	O O l l
			46	13		W	0	O O d t
				7		W	21	O O l g
			1 0		5	I		O O l l
			9			W	18	O O l t
			7			W		O O l l
D	26	S S	6 1	05		I	20	9 l l p t
			9		10	W	2	S l l l t
			9		96	W	2	T w m l l t p t
			6		1	W	21	Q t
			1		1	W	11	I l l
					14	W	14	I h l w h s l l l l l y l g l l
					1	W	7	T l t l k p t
			20		8	W	20	I t t l t
			28		1	W		S l d f t l t
			23	1		W	22	T w l d f t
			85	28		W	31	C t
			10 17	28		W	30	S d t
			0		43	F	18	S l l t
			11 0		50	L	1	T l l t
			9	0		W	14	S l l p t
D	27	C N	10 34		24	W	86	L g
			11 0		50	E	60	L g
			7		3	E	80	L g

D t d b	H M M F	B	I t d		Lmb	H ght	R m k
			V th	S th			
1904 F b y 28	GN			43	W	2	O l g q t f t f m t t b th
				29	W	4	O m d t q t b ght
				19	W	24	O m l l d q t b ght
			28		E	12	O m l l
			2	10	E	36	O m d t b l t
					E		O y l l d l w
			21	36	W		O y m l l d l w
					D	48	O m d t
D 29	b			59	W	34	L g
			48	39	D	34	L g
				31	W	32	O t f t
				1	W	18	Q t
			5		W	4	l p t
			5		W	18	D l t l d l t g
				1	E	0	E l t
				3	D	18	S n l l
				3	E	18	S n l l
				35	D	40	L q t
				45	D	42	Q t
				52	D	70	Q t
M h	GN			65	W	6	S l l
			11	60	W	80	O l y d b d p t
					W	24	O l g f n t
			29	6	E	24	O l f t
				29	W	4	O l g f n t
			49		E		O m d f t
					W		O l l l
D	SS			61	W	30	L g i t b b b b l t
				61	W	30	L p t b b b b g l t
			29	45	D		A y l w b k q t
				88	W	0	m l l t
				19	W	20	S l l t
					W	9	S l l f t
			32		W	2	L l t l d
			30		W	2	I m l l
			58 t 65		W		F y l w m l l
D 3	GV			61	W		O n d t f i d t f t
				40	W	4	A p f i t d t f t
				2	W		S N
				2	W		A g p f f l l f t
				3	E		O m l l
				66	W	24	M l l
D 4	SS			78	E	34	Q t l
				28 t 15	W	80	V y l k i p i t l d l y h g g
			0		E	34	L
			24		E	4	M l t q t S N t
			14		E	80	I g l t
				7	W		L w l t
			40		E		L g ( t y f t
D 5	GV				F	24	T l b g l t l t th
			5		E	20	O l g b h t
			46		E	3	O l g b g h t
			1	21	W		I m d t b g l t l t g th
				68	W		O d l f t
			4		W	3	F l g l t t l
				4	E		Th m l f n t l w
D 6	SS			6	W	30	E i t S \ t
				8	W	24	L j t S N t
D 7	GN			70	W	60	S N t (
				58	W	1	S N t (b)
				24	W	36	S h t ( )
					D	30	O m l l t t l b g l t
				6	E		O m l l d b g l t
			28		W		O l t y b h t p t S N t (d)

D d b	H M M T	B	L t t d		L m b	H h t	R m l
			N t h	t h			
1904							
M h 8	SS	8 15		75 t 68	W	84	T l g l m l l pt S
		28	7		E	21	N t ( )
		35		40	W	21	S l d ( )
		40		15 t 5	W	20	D t t f l t g p k
		51	9		L	24	T l pt S N (b)
		58	23		W	18	V y m l l
		5	25		W	80	M i t l t g
				18 t 17	E		S N t ( )
		9 8		30	E	80	T l g l t h
		10		48	F	88	L g
		12		50	L	36	L g
		20	86		W	48	E l t
D 9	C N	9 8		70	W		l w l t t S N t ( )
		1		80	W		O pt d t S N t (b)
		7		53	W		O pt d t S N t ( )
		83	65		F		l w m l l f t
		35		30	W		O m d t
		39		7	F		O m l l j t k
		41	24		W		I h l l j t l l
		13	35		W		O l l j t k
		15		11	D		T w d t
		47		46	D		O m l t t l l S N t (d)
D 10	SS	9 25		7	W	22	D pt
		27		53	W	42	D l t
		26		48	W	18	V y l l
		16	7		D	30	V y l g i t
		77	25		D	18	S l l t
		10 03	1		D	18	q l l t
		0		8	L	31	S l l d f t
		2		1	D	30	L pt
D 11	G N	10 50		73	W	11	O pt l l t S N t ( )
		11		3	W	14	O pt l l t S N t (b)
		5	8		E	18	O l t i t
		20		75	L	30	T l t g l t
D 1	SS	10 5		7	F	36	l t S N ( )
		4		63	W	24	D pt
		17	4		W	20	E l t
			30		D	30	I s q t
		3	31		F	21	Q t
					L	42	l w l g i t i l l y b g l t l
		9		10	W	14	S l f t l d
		41	18		W	14	S m l l t
		12	21		W		A y l b k
		15			W		/ y m l l l l S N t (b)
		1		59	F		l l m l l
				71	E	80	V y f t q t
D 13	G N	9 30		73	W	21	O n d t b l t d pt S N t
		8		6	W	91	( ) O m d t b l pt D d D
		10	6		F	1	l l t l l t
		9 42		0	L		O l g f t
		0		41	F		O t l l l l
		10 0		21	F		l w l l l d
		10 10	9		W		A l f t h l l S N t (b)
D 14	SS	10 7		28	L	88	I h l g
		12		86	W	60 36 t	T l l g
		1			W	83	
		9		11	W		l w y m l l f t l d
		0		1	W		A l b k
					W		l y f l d
					W	4 t 34	l y b g h t t

D t d b	H M M I	B	L t t t		L m l	H g h t	R k
			N t h	S t h			
1904							
M h 14	SS		12 31 53		W W W	14 20 58 55 & 81 40	O f t l O l d M q t L g f t q t q l t l f d L h m l l L f t q t t l t f m t h l p l O f t l t g S N t ) L l t S N t (b) T w y l w F l g L l g T w y l
				10	E		
				4	D	84	
				1	D	4	
			6		E	21	
			48		T	5	
				51	W		
				68 t 58	W	33	
			8		D	30	
			66		E	36	
			64		T		
D 1	CN			08	W	35	O m d l l t t l f t t t l l p t S N t ( ) O l y l g p t b l l t S N t (b) O l g l t O l g p t T w l g p t l t h t h T w y l b l l t l t g t l O l t q t O l t S N t ( )
				26	D		
				4	W		
			55		E		
			39		D		
				12	W		
			3		D		
				24	E		
u 16	bs			55	W	12	L l t
				42	W	14	V y m l l
			18		W	2	T t l d
			24		W		V y l b g l t l k
			31		W	2	T w m d t
			47		W	31	T t l d
			49		W	30	M d t l t
			51		W	18	S l l q t
			53		W	18	S m l l n t
				4	D	24	M d t q t
				48	T	72	L g l l
				1	F	30	T l l l
			2 t 7		E		S N t
D 17	GN			54	W	24	O l f t j t k
			10		W		O y l p t S N t
D 18	GN			39	L	30	O l g p t d p f j t S N t
				74	L	6	O l w t n l y b g h t l t
			68		W		O y l g t n l y b l l t l t
				84	W		O m d t p t
			58		E		O l g m l t l t
			47		E		T m d t b l l t p t
				34	W		T l g p t
				4	W		T w l d
					W		O l l t l t
D 19	SS			42	W	4	L g b l t
				33	W	26	M l t q n t
				14	W	30	L g q t t l k S N t ( )
				4	W	30	L g q t t y f t
			94 t 3		W	24	T h m d t b g l t
			50		W	54	L g q t
			58		W		A y l w b k
			68		W		L g q t t S N t (b)
			23		E	24	T w l d f t
			12		E		S N t ( )
			3		E	0	S m l l b g h t
				8	D		L w l d t k
				15	L	36	S N t (2)
				61	E	30	M d t q t
				87	E		V y l w f t



D t a b	H MMI	B	L t t l		L b	H g l t	R l
			N t h	S t h			
1904							
M h 2	SS			35	W	7	I g i t
				18	W	24	L g p t l g l t l k l k
				1	W	51	D p t l g l t t k S N t ( )
				10	W		A m l l t k i t l t f t l m
			9		W	30	ph S N t (b)
			2		W	0	V y l l i t l g l t S N t ( )
			29		W	0	D p t l g y l g h t S N t e ( )
			8		W	30	l h b g h t j t
			61		W		V y m l l
				08	F	48	A y l g l i f j t
				58	F	90	A m l l m p f j t
				53	D	98	A l l l i f j t
			12		D	1	C l m h j b g l t N l
	10		21		D	1	A y l l l g l t l k
			34		E	1	A y l l f t x t n f l ph
			41		E		A m l l d t k
D 6	C N			45	W	10	V y f t b l l k
				83	W	6	A g p f f f l l f t l l f k l
				0	W	21	j t l t A l p f t l y l g l t m i t p e o
			28		W	14	A l d b l t l y b g l t S N t e o
			37		W	12	I t l y b g h t
			44		W	12	I t l y b g l t
			61		W	12	I t l y b g l t
			85		E	8	A l t b g l t j t
			55		F	0	V y m l l g l t
		0	14		F	10	L b t t l y l g l t
				3	F	10	B g l t t l l d l l
				40	F	10	I w l g l t
				67	E	00	V y l g t l l p y l l
D 7	SS			0	W	20	S m l l o t
				39	W	12	T l l i t
				20	W		O l m p l y l g l t N l o n i e
				5	W		( L h l o t S N t ( )
			40		W	65	L g l p t S N t ( )
	10		61		W		S m l l f t l t
			74		W	12	T l l l d
			12		F	34	S l d S N t ( / )
				81	F	48	V y l l p t v S N t ( )
				36	F	18	T l g l t t l l t t
				82	D	8	O l g l t t l l t t
				29	D	00	O t l l
D 5	C N			37	F	24	O l g a l m t l
				26	F		O l d j t
				2	F		O b l j t
				4	E	9	O t l k d t l l j t o l t o t
				30	E	9	O l k l t l l j t o l t t
				59	E	5	O y l g t l k o
				4	W	18	O b d
				48	W		T h j t
				31	W		I j t
				18	W		O l t
					W		O b g l t l d
			24		W	18	T l l t g t l n l l
			3		W	30	O b l
					W	46	O t l l
D 29	SS			3	W	30	I p t p d l y l n g k f
				31	W	15	S m l l
					W	20	S l l
			8		W		V y m l l
	9 19		58		W	84	T l l
			55		W		V v l l f m l w t h n t l p v s f i t e o n
				54	F	42	F t S N t ( )
			58		E		A f w m l l t k S N t e (b)
				6	D		V y b d f t j u i n t



D t d b	H M M T	B	L t t d		L m	H g l t	P k
			N t h	S t l			
1904							
A 1 5	SS	J 15 22 28	41	1 50	W W W	86 54 24	l f t l d j t d t m h m l l p t S N t B d t g h t l t
D 6	GN	9 30 t 10 30	51 52	8 2 27 & 28 34 52 54 (1 57	1 E E E E D D W W W W W	4 4 40 21	O f l l j t O l t j t O f l l j t w t h l l t t O l t j t l j S l l j t l t t h O f l d j t O l l T l t j t O l l j t l l t t t l T b l d O l t j t
D 7	SS	9 30 5 10 02 0 15 3 41	1 2 4 8 54 22 12 5	68 64 J 1 8 54 22 12 5 48 54	W E E E D D F W W W W W	86 1 J 00 1 90 80 12 12 12 4 30	B l t l V y m l l l l l t S N t T w l l t l t S N t l l l l V j l l 90 l y t l l j t 80 l l t l l t h l l l t b l b 12 V y l l 12 V y l l 12 l l t 30 T l f t l i
D 8	GN	9 10 t 11 0	6 2 4 2	56 28 6 50 70 43 26 20	D D D E W W W W W	3 12 20 12 4	B l l t a l S l t j t N l f l j t N m l f l j t T j t T j t
D 9	SS	0 40 t 10 40	8 8 2 1 1 05 1 05	16 17 29 31 33 34 44 68 82 81 26 6 2 9 1 01 49 87 34 28 9 4 10 46	W W L L D E W W W W W W W W W W W W W W	4 45 30 4 24 48 60 1 46 0 48 36 48 12 5 12 12 12 12 15 40 40 24	B l d t l l D p t F l t l p t F l t T y m l l f t T l t l t l S N t
D 10	SS	9 25 35 20 10 10	2 05 1 05 1	9 1 01 49 87 34 28 9 4 10 46	W D D E I D L D L W W W W W W W W W W	60 1 46 0 48 36 48 12 5 12 12 12 12 15 40 40 24	S N t
D 11	GN	9 0 t 10 0	05 7 d 6	29 20 9 7 d 6	D E D E		T h j t O b d j t T w i t t



Dt d b	H MMT	B	L t t l		L b	H l t	R m k
			N t l	S t h			
1904 A <sub>1</sub> 111	GN			32 36	E J W W W W	O T D Tw Th O	J t t bl j t j t j t j b
D 1	SS		1 1	10 40 50 70	W W E E L L E P W	2 28 30	
D 13	SS		3	65 71 59 8 6 40 38 24	W W F E E D E E D E L W W W W W	9b 9 80 48 24 1 12 12 4 80 30 68 4 48 84 42 36 12	T V I Tw O      B ght pt B ght pt F t E pt E pt Tw pt
D 14	GN		1 7	8 18 18 48 41 58 58 11	E E E F E W W W W W W	40 88 88 24 36 50 50 48 4 24 24	\ y f t         B d Sh r j t Th r j t Th j t Larg fl m t l L g sl m t l M b ht C d j t C d j t I m t l
D 17	SS		8 2 1 15 3 05 2	72 81 53 57 81 81 81 1 80 48	W W L E E W W W W W	86 86 48 48 98 2 75 12 8 42	L ge V y b ght pt L g f t L g faxnt Bright pt E pt I pt
D 16	GN		8 1 4 3 1 1 1 2 2 5	68 89 14 29 43 70 28 12 1 51	F P L E E W W W W W	24 24 9 8 8 12 12 7 12 12 18	fl m t l Tw j t S l j t h r t Th m l l h t j t C d j t h t J t t p p d t Th j t Our d j t Tw j t Tw j t S l j t t p j m d
D 18	SS		05	74 40	W W	84 42	E pt





D t nd b	H MMT	B	L t t d		L mb	H g l t	R m k
			N w l	S th			
1904							
Ap 1 28	G N	10 0 t 11 0	10	2 51 2	W W W W W W W	12 12 1 24 24 24 2 72	L g J d t t p
D 9	SS	9 45 t 11 30	05 1 15 15 15 1	49 37 31 16 28 1 33 9 30 38	E E E E E E W W W W W	48 24 24 36 36 108 24 42 48 84 12 24 4	Tw m ll Tw m ll E pt E pt A n f d l p f b g h t l d l t D pt S N t Tw m ll L pt E pt W pt
D 30	G N	11 0 t 12 0	5 6 25 25	50 32 41 22	E E W W W	40 18 18 88	Th j t Th h t p ll O py m d l
M y 1	SS	9 10 t 10 05	1 25	64 8 49 44 10	E E E E E E L W W W W	18 24 18 36 24 77 27 30 12 24 48 45	Tw ll E pt V y f t V y f m t E pt
D 2	G N	10 0 t 11 30	2 2 2 2 5 5 3 05 15 05 4 2	57 34 9 8 16 80 40 54 64 57 48 38 2 3 6 10 19	E E E E E F D L L L W W W W W W W W W	12 48 44 44 1 20 40 76 84 12 18 32 32 32 32 32 32 80	Th j t Th j t F k d j t L g e pt p d l y l g g I g e pt p d l y h g g
D 3	SS	9 0 t 10 2	7	42 2J 14 t 7 5 2 5 24 36 6 12 11	E E E E E E E W W W W	36 12 27 7 12 24 60 24 30 4 24	E pt p d l y h g m g Th pt E pt D pl d b t l a t l t d O

D t d b	H M M I	B	L t t l		L m b	H g h t	I m
			N t l	S h			
1904							
M y 3	SS			8	W	19	Tw n ll
				30	W	18 & 12	Tw m ll
D 1	GN	11	03		F	28	J t
		1 t 0	4		F	40	J t
			87		I	188	O y t ll; tw th m ll
			2)		F	48	S ll; t f l d
			c		F	52	J t
				21	I	12	Sm ll
				20	L	12	S ll
				80	I	1	S ll; t
				70	W	1	S ll; t S N t ( )
				(0	W	11	
				12	W	11	D ll; t
				1J	W	26	S N t (b)
			6		W	0	I l t; t
			1		N	21	M l; t
			54		W	40	I l m ll; t t b t m
D	SS	8 0		51	F	48	V y f t
		10 t 0		33	I	1	I l p t
			11	10 t 30	I	27	
				38	E	27	
				1	I	(0	
				77	W	24	S; t
				25	W	9	I l; t l y b g l t
				40	W	18	
				13	W		
				0	W	8)	V y f t
D C	GN	) 30	17	71	F	21	
		1 t 0	18	27	I	68	V y l b l g l t
				10	I	12	S ll; t
				11	I	1	N t
				28	I	12	
				31	J	12	
				8	W	1	
				12	W	31	F l; t l
			8		W	21	M d b g l t t b t t m f i t t p
			21		W	21	H; t
D 7	SS	J 15	10	2 t 32	ll	18	ll y l; t p t
		1)	8	1 t 53	I	1	lw p
		30	1		W	(f	I p t
				12	W	1	
				33			
D 8	SS	9 0		10	I	4	V y f t
		10 t 0		24	I	1	
				31	I	12	I g; t
				58	I	31	L g; t
				43	W	46	
				87	W	24	V y f t
			16 t 12		W		
			J		W		A l w b g l t b k
			c		W	24	
					W	30	
				13	W	18	
				16	W	12	
				2	W	24	
				32	W	24	
				42	W	12	
				53	W	16	
D 9	SS	9 15	2	04	W	24	I w; t p t S N t ( )
		10 t 0	1	75	W	31	I t
			1	78	D	18	
				21	I	12	
				15	I	12	
				27	D	12	
				51	E	31	I p t
			05	55	E	18	

D t d b	H M M T	B	L t t d		l m b	H g h t	R m k	
			N t h	S t h				
1901								
M y 9	SS	9 15 t 10 0	1 11	59		E	12	E pt Tw S N t (b) Th l g pt
				57		W	21	
				12		W	60	
				18 t 7		W	42	
					8	W	1	
					18	W	24	
					14	W	18	
					17	W	21	
					32	W	30	
					30	W	16	
					16	W	1	
D 10	SS	9 20 t 10 30	2 15		70	W	12	Tw Al w b k Tw S N t Tw Tw
					14	E	18	
					12	D	24	
					27	E	18	
					7	D	1	
					5	L	36	
					5	W	30	
					40	W	48	
					35 38	W	60	
						W	60	
						W	36	
D 1	SS	9 20 t 10 15	2 11 1		68	W	48	Tw S N t ( ) S N t (b)
					4	E	36	
					7	E	12	
					17	L	48	
					24 t 3	D	21	
					28	W	21	
					17	W	36	
						W	24	
					81	W	24	
						D	21	
						D	36	
D 13	SS	8 5 t 9 30	1 1 2 1 0		51	D	21	Tw T pt Tw
					12	D	36	
					11	I	2	
					1	E	48	
					52	W	30	
					21	W	30	
					18	W	4	
						W	1	
					8	W	1	
					31	W	1	
					41	W	18	
D 14	GN	10 0 t 11 0	3 3 4 3 15	50		E	30	D bl J t J t B g h t t l t d J t M t b t t m d f l m t l t t p J t
				8		I	18	
					48	D	12	
					57	D	12	
					17	W	12	
						W	12	
					26	W	15	
					36	W	1	
					50	W	23	
					32	W	12	
				D 1	SS	8 50 t 9 5	1 05 2 05 1	
	79	E	4					
	61	E	1					
		E	12					
	18	Γ	30					
	21	D	12					
	0	Γ	21					
	51	W	30					
	40	W	1					
	16	W	19					

D t	l b	H M V T	B	L t t l		L b	H ght	P mark
				\ tl	S th			
1004								
M y 15	S	8 50 t 2	05 15	7	51 67	W W W	48 4 15	
D 16	C N	J 45 t 15	05 1 1 1	61 80 18 0	11 18 32 3 59 0 48 9 3	E L L L E E W W W W W W W	48 0 80 0 4 1 4 4 24 20 18 19 18 18 12 1	B ght S pa t d f m lmb D bl
D 17	S S	10 0 t 1	1 05	1)	81 11	L L W W	4 12 24	Tw b ght p k S N t
D J	S S	8 1 t 0	1 1	10	47 2	L L L E W	86 16 48 30 1	E pt
D 20	G N	12 ( ) t 30	1	( ) 54 18	6 34 11 5	L E D I L L L E W W	84 86 40 1 15 40 10	B k
D 21	G N	9 45 t 30	1 2 1 2	1 16 36 57	1 3 4 17 6 18 8	L L L W W W W W W	35 4 50 80 6 1 18 12 1	M J t J t J t J t D bl j t N mb f j t
D 22	G N	8 0 t 0	1 2 3 05 25 2	13 10 2 28 37 58	21 34 47 71 7 33 23	E L L L L W W W W W	4 4 19 12 24 18 21 21 21 21 20 12 30 36	B k j t J J t T pl j t J t E j t C d P l l M M
D 23	S S	8 45 9 05	15 7	63 3 31 5 t	21 34 47 71 7 33 23	E L L L L W W W	18 81 84 86	S N t ( ) D 1 t N t ( )

D t n l b	H M M T	B	L d		L m b	H h t	R m k
			N l	S t h			
1901							
M y 28	SS	15 2	1 t 12 (0 22	0 21	D W W W W	12 48 1 3 108	E p t S \ t ( ) Q t D p t S N t (d)
D 24	GN	12 0 t 1 20		49 32	D E W W W	18 21 10 80 25	Sm ll j t S N t S ll j t S N t Sm ll j t S N t Tw d m d j t
D 5	SS	8 0 t 8 50 1 1	1) 58 30	25 52	E D W W W	48 46 21	D p t l d l y l g g A b g h t l l l m Tw V y m l l d f t
D 27	SS	8 0 t 8 80 d 10 0 t 10 80		74 6 45 4 2 6 60	W E I D L E W	1 48 51 18 96 12 86	D p t S N t ( ) B g l t m l l S N t (b)
D 28	GN	9 0 t 10 0 15 2 15	42 8 5 1	88 55	E I D I W W W W	40 20 30 1 18 28 28 16 8	L g j t J t D b l j t O d t
D 20	SS	8 50 1 1 1 0 0 2 15	26 38 64 47 10	73 0	W I I I W W W W	4 1 48 12 21 27 12	Tw y f t B l t p t A l b l l g h t p t
J 1	GN		2 1 17 10	8 1	I L t E D	18 38 86 1 18	S N t
D 3	GN	9 80 t 10 80	00 29 18	11 28 86 19 11	D L D E L W W W	20 12 36 36 48 24 40 48	Sm ll l h l j t L d S N t ( ) O d S N t (b) S N t ( ) D b l D b l
D 5	GN	8 45 t 9 80	59 41 8 81	19 68 58 32	E E L E E W W W W W	23 24 36 10 36 42 20 48 48 48 24	L g J t S h t j t D b l j t d Sm ll L g D b l j t l k L g t l k L g t l k S ll



D t d b	H M M T	B	L t t d		L m b	H h t	R m k	
			N t h	S t h				
1904								
J 9	SS	7 40 t 0 d 0 10 40	1 1 1 4 1 1 3 1 1	2 57 17 37 26	62 50 18	L D I E P W W W W	24 80 48 51 21 80 7 21	A l d t l B g l t p t A b g l t t k V y m l l I t b h t p t M d t l g h t M d t f t T w l g p t V y m l l B g l t t g l S N t
D 11	SS	8 5  10 20 28 31  42 45	2  05 05  1 2 2	2 12 5 5 42 30 32 30 t 8 )	42 3 27 24 18  17	I I F I L E L W W W W W W W	80 30 54 18 21 60 48 27 18 12 48 70 70 18	D p t S N t () V y m l l b g l t V y l g l t S N t (b) V y b h t T w l t L p t L g p t A l w b g l t b k V y l t
D 12	SS	8 40 t 0 9 0	0	21 3)	15 31	I I I W	24 31 30 21	S N t
D 13	SS	10 55 11 3 6 13 25	05 3 1 13 1	15 t 1) 25 29 57 t 8 40 4 2	4 12	D I I I I F W W W W W	24 12 80 24 31 21 48 73	V y m l l g l t I t S N t () I p t S h t l l J w l w I b g h t S N t (b) & ()
D 14	GN	) 0 t 15	05 1 4 2	60 58 t 7 90 20 13  5 1 43	71 48 39 t 38 32	I D E F F L F W W W W W W	48 4 26 18 18 18 3 4 12 1 20 20 20	B d j t T j t T j t I t D b l j t J t F B g h t l g D t b d S N t
D 21	GN	9 0 t 0 10 0	0 05 15 10 4 3	59 38  80 38 61	21 58 41 19	D F L L W W W W	12 70 12 20 60 24 12 36 81	S l t T l l D l l I t M b g h t C d T b l l t g t h B d l g l t t l l
D 22	SS	8 43	15 15	3	60 4 26	E E F D	12 36 18	A l w l g l t b k A t g l p l l



Dt d b	H MMT	B	L t t d		L m b	H h t	R k
			N t l	S t h			
1904							
J ly 9	G N	10 26 24	1 2	60 51 3	E D L L E E D E W W	1 18 12 12 6 18 18 18 48 24	Tw j t Tw j t A mb f i g f i l m n t l B g h t
		9 0 19 19 40 10 10 15 40 35	2 1 15	30 31 13	43 45 35		
D 10	G N	10 0 50 54 18 18 17 17 10 20 1	2 1	33	I E L I E L D W W	86 14 20 0 0 18 18 18 30	
		10 20 1	1 7	21 t 8			
D 11	G N	1) 3 0	1 1 1	7 94 32 7 30 9 7	I D F L L I L I L	0 1 12 4 0 18 20 12 0	
		J 6 1 54	1 30		12 14		
		0 1 10 2 0 0 8	2 2	J 11 10	33 10	E F W W W	8 18 8 6 12 24
D 1	G N		3	(1 t 8 31 27 17 t 1 )	I F L I E F L W	12 1 20 21 12 18 44 J	F i l m t l T h o o j t F t f i l m t l
		11 3 30 22 1 1 58	1 3		17 8 9 t C (7 t 6)		
D 13	G N	11 0 0 50 35 20	1 1 3 3 8	15 20 32 t 36 43 t 40	L L L W W	1 1 21 2) 18 30	L g f i l m n t l M I g
D 15	G N	11 20 0 3 0	8 1 5	59 t 57 20	I I D F W W W	30 12 46 30 38 12 20 21 t	Sp k l k E p t p l S N t F j t T h p m S u
		11 30 30 30 11 3		60	20 t 23 50 t 60 68 t 68 80 28 22		
D 20	G N	11 0	15		L	48	L a g e p t S N t
D 28	G N	J 16 1 38 37	10 25	7 t 17 4	I F F	24 21 1 20	

D t d b	H M M F	B	L t t d		L m b	H g h t	R m k
			N h	S t h			
90+	M						
J ly 23	GN	25		29	D	12	
				33	D	12	
				78	W	12	J t
				72	W	12	J t
		2		80 t 97	W	24	
		0		33	W	21	
		8		21	W	1	
		2		8	W	12	
		3	0 t 1		W	1	
		1	9		W	24	
		1	83		W	24	
		2	58		W	80	
D 26	GN	1	54		L	1	
		2	7 t		E		Sm ll j t
		1		4	E	20	
		2		18 t 2	D	20	
		2		57	W	24	Cu d
		3		40	W	12	
		7	1 t 10		W	24	B g h t m
		4	27 t 31		W	30	B g h t
			31		W	1	
D 27	GN	1		12	E	1	
				10	D		
				6	I	12	
		05		37	W	8	
				18	W	1	
		8	13 t 21		W	2	B g h t m
		0	21		W	1	
		2	2 t 29		W	0	B g h t t l l m
		1	31 t 35		W	50	T l l b k
			42		W	50	T l l j t
		2	00 t 62		W	24	
D 28	GN		0		F	21	
			55		D	30	
		05	26		D	0	
		15	24		L		
				19 t 21	F		
		2		28	I	8	
				34	D	12	
				61	I	1	
		1		615	W	80	
		4		17 t 18	W	0	
		2	30 t 32		W	30	
		4	40 to 44		W	50	T l l l t l
			58		W	6	
		4	02 t 08		W	20	
		05	6)		F	12	
D 29	GN	05	20		E	20	
		1		9	E	12	D bl
				3	L	24	D bl
		15		41	W	1	D bl
		4		34 t 30	W	12	
		0		21	W	24	
		05		10	W	24	
		5	2 t 27		W	1	T pl
D 30	GN		78		W	24	
			54		E	6	
			41		F	18	
			37		E	18	
		8	18 t 1		E	12	
			58		E	6	
			56		E	0	
		15		27	E	24	
				30	W	20	
				8	W	20	
			20 t 27		W	30	C d n d d t h d f m h m ph



D t d b	H M M T	B	L t t l		L ml	H ht	R k
			V tl	S tl			
1904							
A g t 10	G \	8 34 30 9 51 50 48 48 20 4 18 1 10	1 3 3 2	55 60-63 70 8 48-4 42 20 16 9-31 45-47 54 69	D E W W W W W W W W W	48 10 18 1 4 24 80 1 12 21 12	B m b d t 9 h 45 m t
D 11	G N	9 5 2 8 8 55 3 70 9 16 1 )	3 2 1 4	58 42 30 4 24 29 5d 23 46	D L F D E L W W W	10 24 ( 1 12 ( 12 24 30	Tw m ll l t g th Tl q t l
D 12	G N	9 8 6 5 8 45 10 9 43 13 10	15 1 8 1 1 8	59 43 15 18 48 28 5 22	F F E F F W W	4 1 0 4 24 21 21	B ght b t m t ll l
D 18	G N	J 30 2 52 48 47 40 1 18	1 1	11 ( 90 51 27 18	F W W W W W W	2 30 30 1 12 18 12	
D 11	( N	8 27 7 4 22 0 52 0 4 1 4 45 1 15 45 10 30 30 30	1 1 1 3 0.5 1 2 1 1 1 0 0.5 0.5 0 0.5 0.5 1	1 17 2 17 32 J ( 1 j) 8 8 28 1 22 21 31 4 55 56	B I L I I W W W W W W W W W W W W W W W	18 1 12 ( 21 4 1 18 30 30 30 2 12 12 30 18	T q t l lh q t l Sm ll
D 15	G N	J 2 2 0 8 58 55 19 9 25 28 22 0	1 0.5 2 0.5 1 0 0.5 0.5 0 0.5 1	93 58 5 28 18 29 (8 57 43 9 32	D L ) F L L D W W W W W W	36 24 24 0 20 12 12 48 6 24 60	

D t d b	II MMI	B	I t t l		L b	H l t	R k
			N y	S th			
1904							
A g t l	C N	J 20	1		20	W	24
		20	1		27	W	24
		20	1		2	W	21
		18		4		W	18
		14		35		W	21
		10	1	48		W	24
		9	1	5		W	1
D 18	G N	10 80	1	645		I	1
		80	1	6 5		I	24
		35	05	2		I	2
		31	2		1	I	12
		31	05		1	I	48
		31	1		3	I	1
		30	0		10	D	24
		5)	2		50	W	26
		9	1		53	W	24
			1		3)	W	1
		48			3	W	3
		46	05		J	W	1
		48	05		7	W	1
		48	1		(	W	21
		13		1		W	38
		13		(		W	1
		10		)		W	24
		30	1	18		W	1
D 17	G N	8 88	15	(		I	8
		38	0	(0		I	30
		35	5	9		I	1
		3	0	1		I	12
		82	05			I	18
		31	0			I	1
		31			9	I	(
		30			10	L	12
		30			12	F	12
		5			12	I	18
		55	1		5)	W	1
		5	1		7	W	24
		5	15			W	21
		0	05		39	W	18
		1		)		W	1
		45		11		W	18
		11	05	15		W	1
		11		1		W	21
		40		40		W	1
D 18	G N	8 47		9		F	41
		14	0	14		I	1
		10			1	I	1
		10	0		(	I	(
		36			41	F	1
		35			0	I	1
		)	01		47	W	6
					4	W	(
			07	8		W	0
		8 5	2	11		W	3
			1	17		W	38
D 19	G N	J 3	2		(	D	9
		2			0	I	12
		17	1	28		W	1
D 1	C N	) 8		71		W	12
		5	1		0	L	18
		11	0		28	I	21
		9	1		10	F	(0
		8 50	05		58	F	4
		9 30	05		71	W	18
		80	05		70	W	18
		7			38	W	8
		5			18	W	12

D i l l f l m ph  
D t h l f m l ph

S N t

Sp d t b l t l k f m t h l

D t d b	H M M T	B	L t t d		L b	H ght	R k
			N t l	S t h			
1904							
A g t 21	GN	9 23	9	1	W	21	
			05	20	W		
			05	28	W		
		20	05	40	W	24	
D 28	SS	10 44	0	3	E	24	E pt
		44	15	38	E	24	
		40			E	30	E pt
		25	6	2	E	46	h f p k
		14	05	37	E	48	
		14		40	E	24	
		14		41	F	21	
		6		58	I		N p m b t h m ph y b g i t
D 24	GN	8 50		37	I	30	
		0		18	E	1	
		41	4		E	36	
		40	1		E	6	
		40			I	21	
		39			L	18	
		36	3		L	49	
		9 6	1		W	13	
		5			W	24	
		4			W	12	
		2	05	7	W	36	
		0	3	29	W	72	
		8 8	05	34	W	30	
		54	05	58	W	1	
D 25	SS	8 14		5	E	80	Al w l t
		16	2	20	E		B g h t l w
			05		I		S m l l
		7 41			I	72	S p d t t t h t p
		55	4		W		
		8			W	18	
		2	05		W	48	
		0		1	W	30	B h t t w m t t p
		6		3	W	30	
		9	1	4	W	24	
		11	2	8	W	21	
D 28	GN	9 9		30	E	1	
		9		9	E	1	
		9		2	E	12	B d t t j
		8		15	E	7	
		6		7	E	12	
				5	F		
				4	F		
				8	F		
		4	05		F	12	
		2	2		I	46	
		21			E	12	
		20			F	3	
		19	1		W	36	F t
		17		9	W	12	
		15	0	40	W	18 & 12	S N t
		13	25	61	W	48	
D 29	SS	9 28		61	E	60	B d t t p
			2	30	E	18	Al w b k
		20	15	6	E	24	B h t t w m t t p
					E		
				4	F	4	S m l l
				12	F		S N t ( )
		12	05		L		S N t (b)
			1		E	120	At l l g h t y l t g
			05		F	2	
			05		E	2	
		45	25		W	36	V y f t
				28	W		T w m l l d t a h d f m h m ph
		34	1	61	W	48	
		34	2	63	W	48	





D t d b	H M M T	B	L t t d		L m b	H g h	B m k
			V t l	S t h			
1904							
S pt mb 9	GN	8 47	05	80		W	6
		40	25	81		E	9
		84		58		E	24
		80	25	58		E	12
		29	25	45	19	E	6
		25	05		55	D	21
		5			67	D	24
		50	2		69	D	72
		58			49	W	24
		51		7	39	W	6
		49		28		W	80
						W	12
D 10	SS	10 25	2	87		D	86
			05		18	D	
		10 19			20	D	18
		15	3		31	D	8
		11	05		51	D	60
		85	05		66	E	48
			2	10	18	W	12
						W	
D 12	S	9 38	2	20		D	30
					58	E	
D 1	GN	9 50	3	85		E	86
		47			9	D	1
		45	15		46	D	24
		18			30	W	40
		7		27		W	18
		7		28		W	8
D 6	SS	8 10		04		W	30
		88	05	58		L	30
			2			E	
		82	14	)		D	21 d 30
			1		27	E	30
		5			8	E	12
		2	05		49	D	86
		20	05				
		9 15	05		79	E	
			1		66	W	
		8 9			12	W	48
			15		20	W	12
		53	15		14	W	80
		40	05	27		W	12
				25		W	12
		40	1	55 5		W	4
D 17	GN		05	59		D	
		9 38	15	84		E	12
		38	1	3		D	1
		38	1	28		E	1
		31	1		19	E	6
		30			33	D	21
		30			40	D	1
			05		51	D	96
		10 4			47	W	28
		40	11		26 5	W	21
		35	05	8		W	18
		35	0	5		W	12
		3		38		W	18
		30	05	52		W	21
		30	05	54		W	24
		30	1	58		W	24
D 18	SS	8 57		59		E	30
		54		45		F	30
		3	05	38		E	8
		50		38		E	86
		4		15		E	42

F t  
 F t b d t t p  
 A b g h t l t  
 B y b g h t  
 Y y f t  
 F t  
 S l t b g h t k h m p h l t b d  
 A b g h t p t S N t  
 A l w b k  
 Th m l m  
 t t h b  
 F w l t l t h  
 Tw l t h t h  
 A m l l y f t l d  
 A m l l y f t l d  
 F t  
 B d t t p  
 Tw q u a t l b d t t p  
 B d t t p

Dt db	H M M T	B	L t t d		L mb	H ght	R m ks
			N th	S th			
1904							
S it mb 18	SS	8 41		26	D	48	D t h d f m l n b
		41		275	D	24	D t l d f l b
		38	8	275	D	72	V y b g l t p t v
		32		C 2	D		V y l l b t b g h t
		10 04	05	70	W	18	Tw q t l
		02	15	9	W	24	
			05	47	W	24	Tw q t l
		10 0		40	W	24	
		9 10		5	W	48	B l t t p
		10		0	W	48 136	l q t l
D 19	G N	8 57	05	42	E	24	
		57	1	385	L	24	
		1		8	L	12	
		54	05	29	D	24	
		54	05	27	D	24	
		52		0	E	108	S p t d f l b l y b t m t
		43	15	2	T	18	
		40	65	42	D	72	
		36		0	D	72	T i l d t t l d t m d
		9		09	E	24	t l t b t
			1	72	W	24	
			1	70	W	24	
			05	64	W	18	
		9		61	W	36	A f t l l l t d t h d f h m
		5	0	41	W	12	l h
		4	1	28	W	24	
		0	2	575	W	72	
D 20	G N	9 2		16	E	30	
		4	8	26	D	18	A l l t f m l t h t t
		0		18	D	60	t k
							I w l t l S N t
D 22	G N	9 4		2	D	4	S N t
D 8	G N	10 01		38	T	10	D t l d f m l l
		03		22	T	24	
		00		13	L	36	
		58		16	I	6	
		57		18	I	3	
		6		40	E	20	
		10 15		6	W	24	
		18		7	W	41	
		12	1	10	W	18	
		11		62	W	36	
D 28	S S	8 54		60	I	36	
		8	1	44	T	24	
		51		35	L	36	
		16	3	18	L	18	
			1		D		
				8	I		
				10	L		
		41	0	1	I	60	All w
		41	2	05	I	60	Cl l h l t b d t l g
		34		73	W	24	I w q t l
		31		09	W	48	I w q t l l t
		21	1	05	W	48	A y f t l t l l l l
				3	W	66	S N t
		3	05	10	W	1	S p l t t b l l f t t t p
		15		3	W	18	I l t l
		7		8	W	36	l t
		1		11	W	36	D t l l f m h m p l
		15		18	W	30	
		15		11	W		
		07	15	34	W	36	S m l l V y b g h t b b y b g l t
		00	15	58	W	10	S m l l D l l (05) t l f l b l d
					W		I t b b p t l l y b g h t
					W		I t

D t n d b	H M M T	B	L t t d		L m b	H g l t	R m k	
			N t h	S t h				
1904								
S p t m b 27	S b	9 28	1	8		D	48	
		21		46		E	42	
		19	1	48 5		E	4	
		14	4	15		E	86	D p t
		11	4		21 5	D	24	W ly 48 l l d t d f t w p
		7	6		51	I	72	D t h l f t 8 h 30 m
					58	Γ	48	D t h l f m h m pl
		9 46			87	W	7	
		40			1	W	84	T l l b t p l y h g g
		38	1 5	34		W	42	D b l
		28	1 5	60 5		W	60	D b l
D 28	G N	9 00	3	54		E	84	
		8 55	2	40		E	86	
		5	2 5		25	D	12	
		50			38	E	12	
		20	0 5		65	W	18	
			3 5	14		W	0	
		41		39		W	12	
		6	5 5	82 5		W	90 160	
D 29	S S	0 18	5	55 5		E	42 d 66	L w
		7	1 5	6		W		
			4 5	15		W	66	
			1	27		W	86	L p t l h l f y b g h t
		10 22	5	68 5		W	48	
D 30	G N	9 13	1	68		W	18	
		12		68		W	12	
		10		87		E	26	
		10		84 5		D	24	D t l l f h p h
		5			23	E	18	
		5	0 5		28 5	E	24	
		3			3	E	12	
		19	2	9		W	24	
		17		19		W	12	
		16	1	20		W	24	
O t b 1	S S	9 10	8	64		W	54	V y f t
				64		D	15	
		3		55		L	42	
		0	0 5	8		E	88	D b l
		0		26		F	1	F f m l l h m pl l t b d
		8 41	1		26 5	E	1	
					0	F	1	
		9 3			10	W	24	q m l l f t
		25			8	W	4	F t
		20	1	30		W	30	D p t
D 2	G N	9 20	12	64		W	48	
		14	1	58 5		D	24	
		14		57		E	80	
		11	1	28 5		D	1	
		11		27		E	86	
		9		2		E	12	
		9		17 5		E	12	
		6			47	E	60	
			1 5		52	E	24	
					61 5	F	12	
		1			79	W	1	
		50	3		88	W	6	
		46	1 5		4	W	18	F t
		1	0 5	0		W	30	
		34		3		W	96	B d d f t t p
		3		8		W	18	
		31		7		W	18	
		30		34		W	24	
D 3	S	9 20	0 5	20		E	78	
		11			50	E	24	

NOTES

1J04  
 S pt mb 28 Fl t m d lltl gl pl w gt b dw tl  
 D 30 Ol t d tl gl b k m l l d  
 O t l W th w l d wtl l tl k  
 D 19 Jb t w d tl gh b k l l d  
 D 22 Ol t d th gl mal d l d  
 N l 7 W tl l dy wtl k  
 D 12 W tl w l ly tl b l  
 D 13 H dp l d  
 D 14 O l g tw ll lk l d th lp t t w th th l mb  
 D 10 O yb dbt t ylg l l th d t t wh l th f m d  
 D 17 Th ly l y d l t w d th ht t d m l l d  
 D 18 O y l gh dl dt l t l t l t l l l d l tl l b  
 D 24 Ob t m l l gl l d  
 D mb 8 II d l g l l  
 1J04  
 J y 20 Ob t w t idly l d  
 I l y 3 Th b d th gl l d  
 D 4 Ag l fl b l ll m g tly d t b l l t f th l b t d g b b t d  
 D ( Th l mb w d t b l b t tw l d  
 D 15 ( ) V y l g g b t f dg f th l b  
 (b) T l l l t p t  
 D 17 Fl p m w t y l g l b t w l d l l t C D l F t ly l ht D D b b and  
 G b g l t  
 M l J Fl l w t l gh tw p b ll t l l t t t t t l D D b b f d a  
 D 4 Af t l d l t h l f m t l h m j h  
 D ( N tl l w y b g h t l t b t l w l l y l g l f m Th fl w g b g h t l w  
 l l th t g -8568 04 (II) 8442784 (O) 8111 388 (I) d B ) D (H l m) 5586 061 (F) 5527 088  
 (-) 4924 107 (I) 5316 058 (-) 527 028 (C) 5234 791 (-) 197 741 (-) b (Mg) l (Mg) b (F) 5018 629  
 (I) 4924 107 (I) (II) Tl w l l m l w i m d f p m  
 D ( ) A t l f f l l t p m b l y l g l t Ph fl l g b g h t l b d -D D  
 436 914 (F C) 5316 790 (I) 52 22 (F O P) b b b 5018 629 (F) 4924 277 (B) 4924 10 (F)  
 4300 301 (I F) 4988 807 (Yt th) 8141 988 (I B)  
 ( ) A l g l m t l y b g l t Ph fl w g l w f d l g h t -8141 988 (F B) D  
 D 511 (790 (I) 27C P (I P C P) 5284 701 (-) 5286 707 (T -) b b b 5018 629 (F) 4924 107 (F)  
 4934 (B) 15192 15 (O)  
 ( ) l l b l t y l g l t l t g t l l l f l b g h t w D D 5316 790 5276 5192 155  
 b b d l  
 (a) L f l b g l t w -D D 511 (790 b l d l  
 D 8 ( ) B g l t l d t l g f t l m j h -4924 107 (F) b (Mg) b (Mg) b (F) 5316 306  
 d 8109 8 (O) 320 220 (I) 5318 058 (-) 5527 088 (-) d 5860 1 F )  
 (b) It t f l t n g l l t l wh l g w y l t b d  
 ( ) l h l m o p l y m h d t l d b t th w l m  
 D 9 ( ) D D 5316 000 b b d b w b g h t  
 (b) D D 316 306 d l w b g l t  
 ( ) D d D w l g h t  
 (a) O w g t th ky b g m l k y t l l m l d t b l l d th l l d t b d t m d  
 th f r l l m Th b k g l b v y b g h t th h h t l d t b d t m e d  
 D 11 ( ) 8141 988 (B B) D D 5316 790 (I) b b b 5018 629 (F) w b g h t  
 (b) D D 5316 790 (F) b b b w b g h t  
 D 12 ( ) 4924 107 (I) b (Mg) b (Mg) d b (F) w b g h t  
 (b) Th p m l d l g d t h p by l l O  
 D 13 ( ) D D 5316 790 (F) b b d b w b g h t  
 (b) Th b k g d w t b g l t t m th l g h t f th p m  
 D 14 ( ) O v y l w b g h t bank nrm nt d l y f t l t g l m  
 (b) Th b w y b g h t n O d F  
 D 15 ( ) D D b d b w b g h t  
 (b) Th fl w g b g l t l w th p m n n t l t t d -26 B -5914 285 (F) D D (N)  
 5638 280 (-) 5624 789 (F d V) 5589 582 (N) d 5558 804 (F)  
 ( ) Th l g h t f th p m nd l t f th l mb w t b d w g t b d w th  
 D 16 A mb i v y m l l d f t t f th h m pl Th wh l g w y d t b d b t w th t  
 y l t t p m



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Ap l 27 (7) D d d lly Th b fth p m n d g f mth b t b t 70 ml p ec d md th  
 t p ip l g t b t o ml p d

D 20 V y l gl It t d f mb f t ght t ll t m f q l h ht Th t p f m f th m w  
 l g d d p t g t i pp f l t f p l m

My 1 ( ) ( d i l s l t d d f th j t  
 (b) B g l t m h t p l l t h d d p l m t t d

D 6 Th j t p t l f mth h m l h th y l w d d p l t t b th l t d d

D 3 (a) H l a d l g d b y 10 l k t h t p k  
 (b) H l l g l t l l t t f t f n l h m t t l th t m t t t p

D 10 T l k t l b h w y f t th t k p j t g t th b h d f k t th t p

D 12 ( ) l l e w d p l t t f p l th e l g t b g b t 2 λ d th t b t 15 Th p m w  
 t d w th p t 278 th S W l m b  
 (b) O b t w m d th g l l d

D 17 O l t d th h l d

D 23 ( ) D l d f m t l l p h  
 (b) B l t l p l w t l f t m t t l w w y f m f th t p  
 ( ) T w b g h t l l l d g t t f t th t l p d l y h  
 (2) A f t l d j l t l h p h by l n t g t m

D 21 O l y l t i t l l m l w b d w g t l d y th

D 27 ( ) F i t l t l y b g l b l l j t Th g - 17 E t - 27 E w y d t b d Th O l w  
 i j l d t - 21 L l t g d l l t y f l u t 90 m l p d w y f m th b  
 (b) H l l t v d t b d b y l l

J 1 O l y l t i t l l l w l l w l l w th

D 3 ( ) H l l f t l p h w d y b h t l D D b l b b g m g th m b  
 (f) S t ( )  
 ( ) H l l l l w g t l y l t b d t h d d j l t t d f b t 45

D 1 O l t w y l l t b d l y l d

D 11 ( ) A l l l t t l t l t d f t l l t - th g t t b g b t 4  
 (f) A t 8 10 t y i t t k l d l y t l l d w th b k A t b t 85 t w b g h t d  
 l t t d t y l l l 2 λ  
 t l t d t h l f th h r p h A t 8 15 t l d

D 1 O l t w d t l h h l d

D 13 ( ) V y l g l t I l y p l (+ 17 L) l t l t l h l h d th t l y l  
 (f) A l l t t l t l w l p l t f b t 2 λ b w l l d th p m n t 10-59  
 ( ) O l t l t l l l y l l

D 11 E l t t l l f t j t l t l l l m t f th l m p l t l y b h t t l t t h  
 k t t l d l l j t l p d l th l j l t l w t th p l S m 5 m ut  
 l t t l y l t l g l t m w p t l h w d t f t l j l

D 7 O w g b l t t l I w p t l l f m P A 180 t 270

Y l y 8 H l l t l l p p p t 305 W h d l y t p p d b k d t t 8 15 t  
 l y l l l I m

D 17 H l t l l l D D l b l l l l t t l l t l t O w d d l l t y w y  
 l l l v E l l h l t y f t

D 0 R d t l t l t l l t

A b t 7 E l l m w y l g h t b t t l l l b l w g p b b l y t b d w th

D 1) H l w t l b l

D 28 H l l t l l f l m l l p l t t l m 12 d th 18 h h

D ( ) A t l d t h l f m t l l j l  
 (f) I l l d f t l t l d f th h p h

S i t l 1 H l w t l l w t m l g t l l

D 3 l l y

D ( H l l l h g l t l l t b l l t l l t w m l th g h l t t l d  
 H l w t l p l w t m d t f i t l b

D 7 ( ) l l t t l w l d j l m t O t t l d l f 35 D D b b d b (Mg n d F) d 6014 457  
 (f) b g l t T l l (678 m t d t t l y  
 (f) T l l l w y b g h t d h g g l d y b u t t l l w 60782 t t l l  
 l l l th p Th l m w l y l t j t t 10 30 d h d l g h t d p l  
 t t th l t d n l t l

D 12 O l y t l S l l d t f t l w m l O b t w t p p d b y l d

D 20 O l y 70 f i l l m l m d t f l d th

D 2 V y b g l t l l l 12 λ t l f g l l l O t t w m d l y f m P A 180 t A 140

D 28 D t l d f th h m l l w l h l t l l f 4 l g b th d

O t l 5 ( ) Th l p m l t th t d j l m t f C t l l t d l th th th d  
 l Th m t h w b t 16 λ Th y w l t 11 40  
 (b) O l v t w d f m P A 70 t P A 185 l y T l w th l d y w i t h b k

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O t b 11 Ob t m d t l g l d t t l l f m 8 4 5 t 9 4

D 18 Th p m pt lly b ght t l w d i l m t t t i t f b t 15 λ t l f g b l  
d l h m t l l T l i m w h h p y p d l y

D 4 Ob t w m d t l h t h l d

D 2 Th t h w b d

D 7 D D b b b b 5018 829 18 790 b l t l f D d D l k h l j t t  
f t h l T l p l i l l ( h t 30 λ t t l d l l l t 15 λ t t h l d

N mb 2 Th S E q d t l y f t l l m b l l t f b l t l

D 11 T l m b w t b d i m P A 180 t P A 210 t l l

D 16 Th p m w l l t d d t h l t m t h h l h T h p b t w t h l p l d l  
p m w 72 t p d l l g A t 9 O t h l g i t i t h i m l d h g i f m J t t  
l 4 d t l t t h h m j h t d t t l p f t h l

D 20 Th f l l l t l b d t l i m p t - 679 285 ( b ) O D D D r 3177 4  
b l b b 018 438 ( N ) 581 F 4 ( ? ) 4924 107 ( b ) 4922 390 ( N ) F 4 096 ( N P ) C 53802 ( F )  
5284 791 ( - ) 5182 76 ( - )

D 21 Th g l h h t y l l b t w 2 t l t t d - 107

D 2 ( ) Th p m w l l t l p t C d i l d d t w d t h l i l l d t  
b t 26 λ Th w d p l t y f t l m t l l l d i l m t t l d  
d p p d b y 8 55

( b ) Th i m t l l t l l d n d b h t m f l t 7 t t l t l

D 23 T l t p t d d f t t m l t l l h t l t t d - 28 L

D 25 Th l l t l t t i d t t l t

D 26 Th p m w t l y b g h t C d p l l l t 4 λ t w l t h d l

D 27 I l p t A t t h f t f t h t l b g i t l l O d i l d b t 2 λ t w l t l d d t 9 5 l  
b b 5197 713 52 4711 27 ( 8 d 31 ( 7 ) 0 l t

D 28 ( ) Th l m j l l g h t l y l t l Th i t l t t l - 10 P w d t l d f t h l j t  
( b ) M t l l 5018 829 ( F ) 4 21 107 ( F ) H 2 H 7 4172 664 ( F ) 4581 018 ( F ) 4 29 21 ( l d O ) l O  
D 6878 235 ( F ) 601 ( 3 4 ( F ) 4649 ( 4 2 ( F ) 4552 87 ( F ) 4 55 6 ( l ) w l l t

D 29 ( ) A l g i t t t l t f t h l m j h l l t h d b g i t l  
( b ) O h h f t h i m y l g l t d w l l t l t l l f f t l

D mb 1 B g f m t h t i t l t l f t t l l m h g t 8 4

D 6 Th l f t h l t t l h l l l t l ( d l m d t l l ) m l 1 1901

D 9 O b a t w m d t l g l i d

D 20 T l t h b d

D 22 Th i m m l l i t t k t l t f t l p w y l g l t d i t l l  
p m w l d l y h g l 10 30 t p t t h t f t l l m t h T l t b l  
t b d p l d b o t l λ t d t l t d A t 10 40 l l T l t l m l l d l t l λ  
b t h w y t t w p t

D 23 Th b t h f d p m l f d m l l t t l

D 29 ( ) Th t h p m l t t t t h l g t t l A t l t l i t h t l  
b g h t h t t d g 7 l g t l

( b ) L t l k t l b h l t l d f m t h

D 30 ( ) Th w t h b p m t l t j f i l t t i t t h g t T l t t l h g l t 120  
( b ) D b l Th r m l t t l j t f l t t l g t l d

D 31 Th b d t h g h t h l d f l y b t 10 d g f t h h l t h w t l m b

O MICHELIE SMITH

De cio K d k n l id Made Obser toris

1966 Jun 1965